

**IN THE DRAWINGS**

*Marked-up versions of FIGs. 1, 2, 4, 8a, 8b, 9a, 9c, 11a – 11c, 12a, 12b, and 15c showing changes in red, follow this page; replacement sheets are positioned at the end of this amendment and response.*

### **REMARKS**

Applicants have considered the office action mailed August 23, 2005 in connection with the above-identified patent application. Applicants note that a Notice of Appeal, accompanied by a petition for three months extension of time, were timely filed in the instant application on February 23, 2006. Applicants now wish to resume prosecution in the instant application and herewith file a Request for Continued Examination (RCE) withdrawing the Notice of Appeal, and a petition for a further two months' extension of time.

Applicants thank the Examiner for his response to the undersigned's telephone enquiry of May 18, 2006. Applicants understand from the Examiner's return phone-call (received by the undersigned's assistant on May 22, 2006) that presenting the claims herein as new claims, rather than as amendments to the previously pending claims, is an acceptable approach.

Applicants ask that the Office records be updated with the current attorney docket number (19662-030001) for the subject application.

### **Statement of Substance of Interview**

Applicants' representative, the undersigned, thank Examiner Sines for courtesies extended during a telephonic interview, November 22, 2005. During that interview, Applicants presented proposed claims in draft form and discussed the patentability of the same with Examiner Sines. No agreement was reached however regarding the patentability of the proposed claims.

### **Amendments to Specification and Drawings**

The Examiner has requested amendment to the drawings to indicate "first, second, third and fourth locations". Applicants respectfully point out that this rejection is rendered moot because the instant, new, claim set presented herein does not recite these terms. Accordingly, the drawings have not been amended in the manner requested by the Examiner. Nevertheless, Applicants refer the Examiner to a number of other minor amendments to the drawings and specification presented herein, as follows.

With the instant amendment and response, Applicants amend the specification and drawings to correct various typographical errors and other various clerical errors, the nature of which would be clear to one of ordinary skill in the art.

FIG. 1 is amended to delete reference numeral 134. Applicants respectfully point out that, as would be clear from the accompanying portion of the specification, the correct reference numeral 134 refers to a different element, as shown in FIG. 2.

FIGs. 2, 4, 8a, and 9a are amended to insert references to corresponding figures wherein arrows are shown to indicate a cross sectional view.

FIG. 4 has been amended to insert (or correct position of) various reference numerals, including 156, 410, 420, 901, 915, 950, 972, 973, 979, and 981. The positioning of such new or revised reference numerals is based on other drawings as filed and the accompanying description found in the specification as filed.

FIGs. 8a and 8b have been amended to insert reference numeral 820, as found in the accompanying description in the specification as filed.

FIGs. 9a and 9b have been amended to insert reference numeral 822, as found in the accompanying description in the specification as filed.

FIGs. 11a – 11c have been amended to insert reference numeral 526, and FIG. 11b has been amended to insert reference numeral 504, as found in the accompanying description in the specification as filed.

FIGs. 12a and 12b have been amended to insert various reference numerals, including 200, 206, 212, 214, 915, and 950. The positioning of such reference numerals is based on other drawings as filed and the accompanying description found in the specification as filed.

FIG. 15c has been amended to insert various reference numerals, including 654, 656, 658, 660, and 682. The positioning of such reference numerals is based on other drawings as filed (in particular FIGs. 15a and 15b) and the accompanying description found in the specification as filed.

All of the amendments to the figures are therefore merely for completeness and consistency, and no new matter is introduced thereby.

In respect of the amendments to the specification, paragraphs on pages 2, 5, 6, 8, 10, 12, 13, 14, 19, 20, 21, and 22 have been amended to correct various errors of spelling, grammar, or in reference to Figure numbers.

Paragraphs at pages 7, 8, 9, 13, 16, 20, 21 and 23 have been amended to correct terminology or reference numerals in the figures where inconsistent with other usage within the specification as filed and where it would be clear which element is correct.

Regarding the paragraph beginning at page 21, line 14, Applicants have also expanded the acronym “TRS” to “thermally responsive substance”. This expansion can be found throughout U.S. patent application serial no. 09/953,921 (now U.S. Patent No. 6,575,188) — for example in the Abstract, Summary of Invention, and claims — to which the instant application claims priority. Since the specification of application serial no. 09/953,921 is incorporated by reference into the specification of the instant application, this amendment introduces no new matter.

Accordingly, none of the foregoing amendments to the specification and claims introduces new matter and entry thereof is respectfully requested.

### **New Claims**

Prior to entry of the instant amendment, claims 1 – 31 were pending in the instant Application. With the instant amendment, Applicants have cancelled claims 1-31 and now present herein new claims 32 – 78.

Claims 32 – 36 are supported by the specification and drawings as filed, at least by FIGs. 2 and 3 and by accompanying paragraphs at page 5, lines 19 – 25, and page 6, line 15 – page 7, line 11 of the specification. In particular, the limitations of claims 34 and 35 find support, for example, at paragraphs page 5, lines 19 – 25, and the limitation of claim 36 finds support in at least page 6, lines 23 – 29.

Claims 37 – 39 are supported by the specification as filed at least by the paragraph at page 5, line 26, to page 6, line 4.

Claims 40 – 42 find support in the specification at, for example, the paragraph at page 6, lines 15 – 21.

Claims 43 and 44 are supported by the specification as filed, at least at the paragraph from page 6, line 30, to page 7, line 3.

Claims 45 – 47 are supported by the specification as filed, at least at paragraph at page 4, lines 7 – 15.

Claim 48 is supported by the specification and drawings as filed, at least in FIG. 4, and at the paragraph from lines 13 – 16 of page 9. Claim 49 is supported by the specification as filed at least by the paragraph that runs from line 29 of page 8 to line 4 of page 9.

Claims 50 – 52 are supported by the specification and drawings as filed, for example in FIGs. 4 – 7, and accompanying specification from page 8, line 29 to page 10, line 14. In particular, claim 51 is supported at least by FIG. 5, and the paragraph from lines 13 – 16 of page 9. Claim 52 also finds support at least in the same paragraph on page 9.

Claim 53 finds support at, for example, paragraphs on page 2, lines 6 – 12, and page 11, lines 16 – 22 of the specification as filed.

The resistive heaters of claims 54 and 55 are supported by, *e.g.*, page 6, lines 15 – 26 of the specification as filed.

Claim 56 is supported by the specification as filed, at least at page 2, lines 17 – 23.

Support for claims 57 – 59 can be found in the specification and drawings as filed, at least at FIGs. 4, 8a, 8b, 9a, 9b, and accompanying paragraphs from page 13, lines 6 through to page 14, line 7. Positioning elements recited in claim 58 find support in the specification at least at paragraphs from page 19, line 20, to page 20, line 3, and from page 22, line 4, to page 23 line 13.

Claim 60 is supported by the specification and drawings as filed, at least at FIGs. 4, 12, and at page 14, lines 13 – 18.

Positioning elements recited in claim 61 find support in the specification and drawings at least in FIGs. 10a – 10c, 11a – 11c, and 15a – 15c, and at least at paragraphs from page 19, line 20, to page 23, line 13.

The lysing mechanism recited in claim 62 finds support in the specification as filed at least at paragraphs on page 14, lines 13 – 18, and page 15, lines 1 – 8.

Claim 63 finds support in the specification as filed at, for example, page 15, lines 1 – 8, and lines 25 – 29.

Claim 64 is supported in the specification and drawings as filed at least by FIGs. 13a and 13b, and accompanying paragraph running from page 15, line 20 to page 16, line 7.

Claims 65 and 66 find support in the specification and drawings as filed at, for example, FIG. 4, and paragraphs on page 7 at line 12 – 21, and from page 16, line 28 to page 17, line 2.

Claim 67, referencing polynucleotides in a lysed microdroplet, is supported in the specification as filed, at least at page 15, lines 13 – 19.

Claims 68 – 73 find support in the specification and drawings as filed at least in FIG. 4, and at specification paragraphs from lines 5 – 22 on page 17. Specifically, the overflow channel recited in claim 70 is supported at least in page 17, lines 5 – 12, and the positioning elements recited in claim 73 are found in the specification and drawings as filed, at least in FIGs. 10a – 10c, 11a – 11c, and 15a – 15c, and at least at paragraphs from page 19, line 20, to page 23, line 13.

Finally, claims 74 – 78, reciting aspects of a DNA manipulation module, are supported by the specification as filed, at least at paragraphs from page 18, line 29, to page 19, line 15.

Accordingly, the new claims presented herein are supported by the specification as filed, and thereby introduce no new matter. Entry thereof is respectfully requested.

### **REJECTIONS OF THE CLAIMS**

#### **Rejections under 35 U.S.C. § 102(e)**

Claims 1-8, 11, 12, 14-25, and 29-31 as previously pending stood rejected under 35 U.S.C. § 102(e) as anticipated by Handique, *et al.*, (U.S. Patent No. 6,130,098 – “Handique”).

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Additionally, “[t]he identical invention must be shown in as complete detail as is contained in the ... claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Applicants respectfully point out that Handique neither teaches each and every element of Applicants’ new claims as introduced herein, nor describes Applicants’ invention in complete detail.

In particular, new claims 32 – 77, as presented herein, recite a microfluidic device having at least the following elements: an enrichment module; a microdroplet preparation module; a cell lysing module; a mixing module; and a DNA manipulation module. Handique does not disclose such a device. For example, Handique does not disclose a microfluidic device having at least a lysing module.

Notwithstanding the fact that claims 1 – 31 are now cancelled, thereby obviating the rejection of record, Applicants also point out the following. The Examiner alleges that Handique “teaches the [further] incorporation of successive gas actuators” (referring to FIG. 5 of Handique). Applicants respectfully disagree. FIG. 5 of Handique shows how successive heating elements can cause a droplet to move along a channel: “[m]ovement is performed using thermal gradients to change the interfacial tension at the front or back of the droplets and, thus, generate pressure differences across the droplet” (Handique, Col. 15, lines 55-58). Thus the multiple heating elements of FIG. 5 are not multiple gas actuators.

Therefore, Handique does not anticipate the claims as currently pending, and therefore Applicants respectfully request that the rejection of record is removed.

### **CONCLUSION**

In view of the above remarks, Applicants respectfully submit that the subject application is in good and proper order for allowance. Withdrawal of the Examiner’s rejections and early notification to this effect are earnestly solicited. If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is encouraged to call the undersigned at (650) 839-5005.

Applicant : Kalyan Handique et al.  
Serial No. : 10/075,371  
Filed : February 15, 2002  
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No fee is believed owed in connection with filing of the instant amendment and response. However, should the Commissioner determine otherwise, the Commissioner is authorized to charge any underpayment or credit any overpayment to Fish & Richardson P.C. Deposit Account No. 06-1050 (ref. No. 19662-030001) for the appropriate amount. A copy of this sheet is attached.

Respectfully submitted,

Date: June 23, 2006

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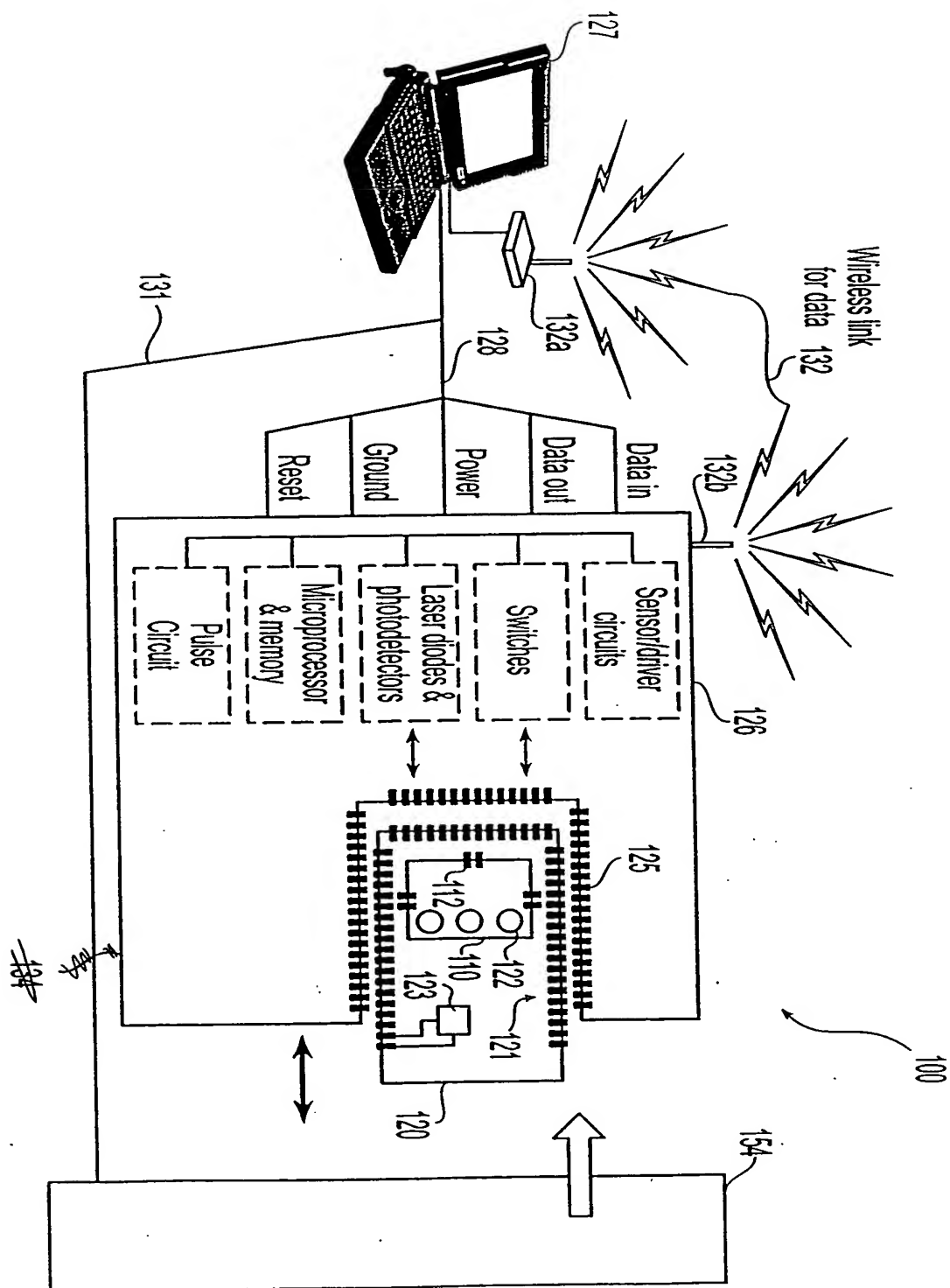
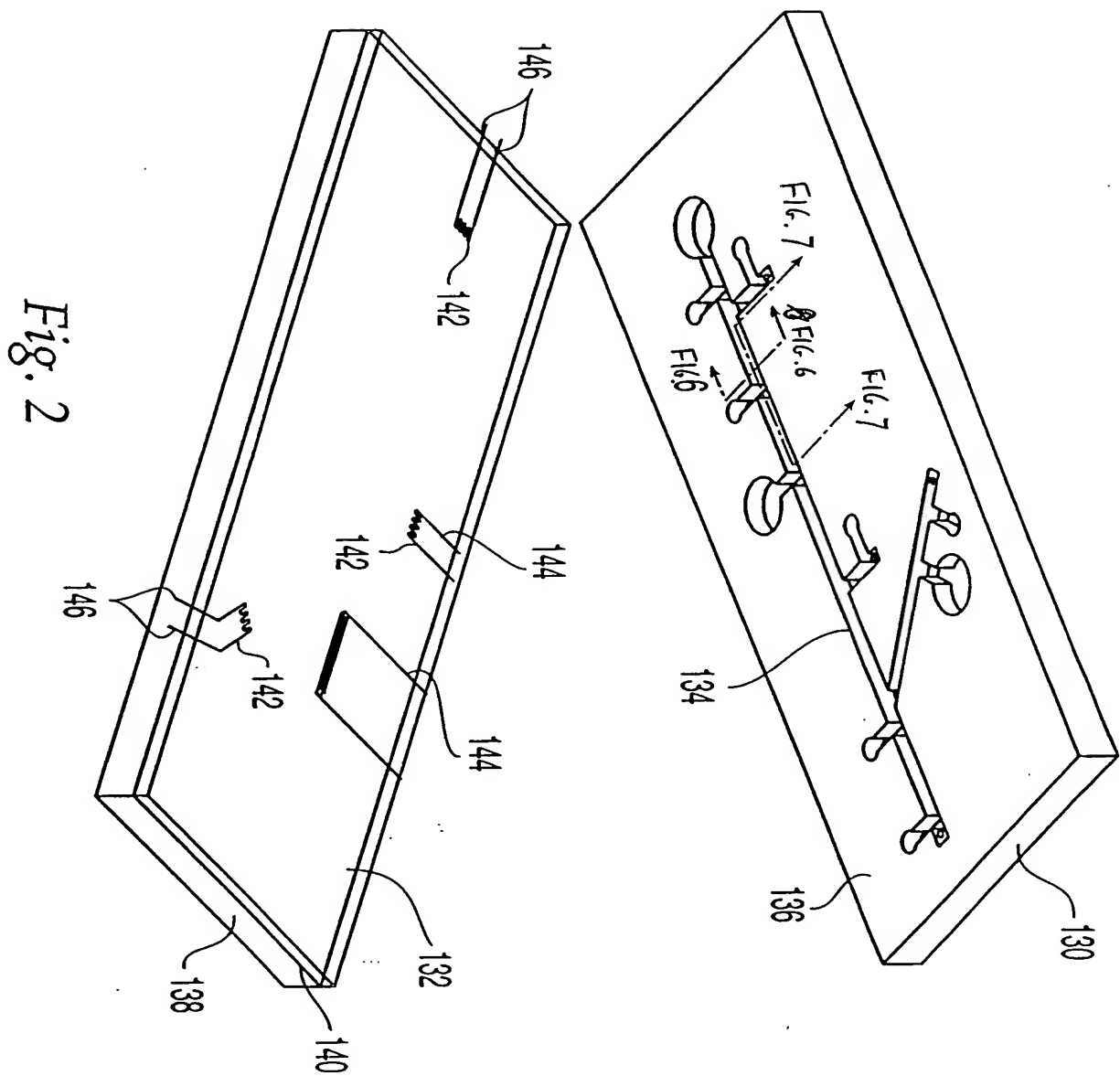
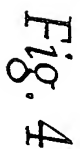
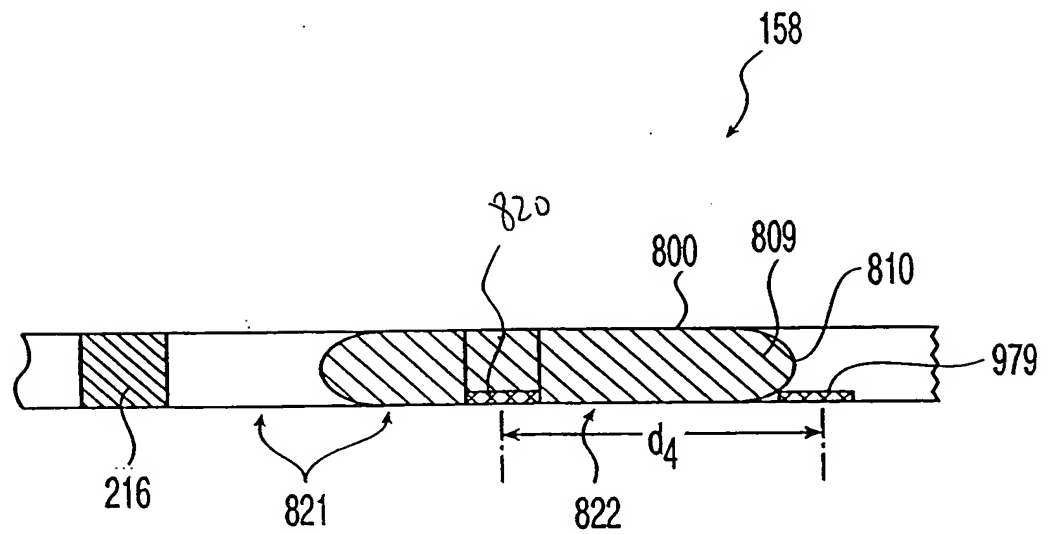
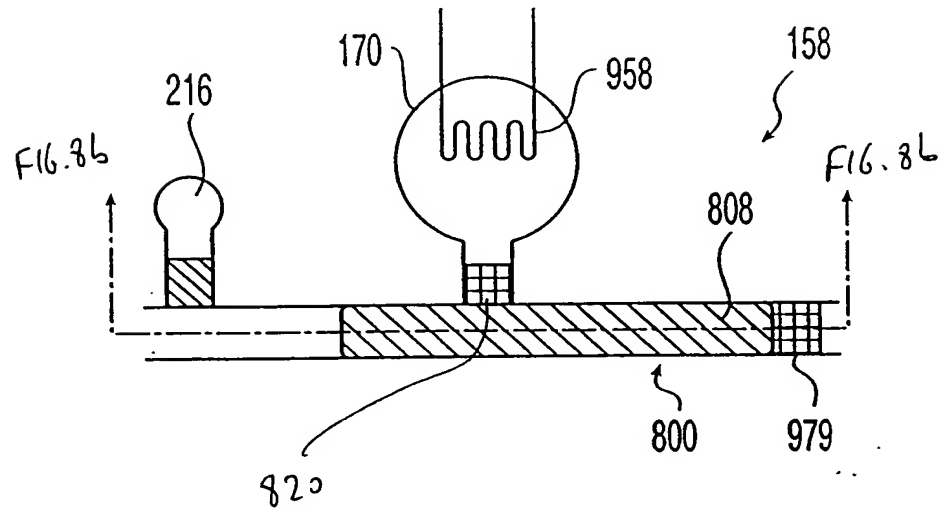


Fig. 1







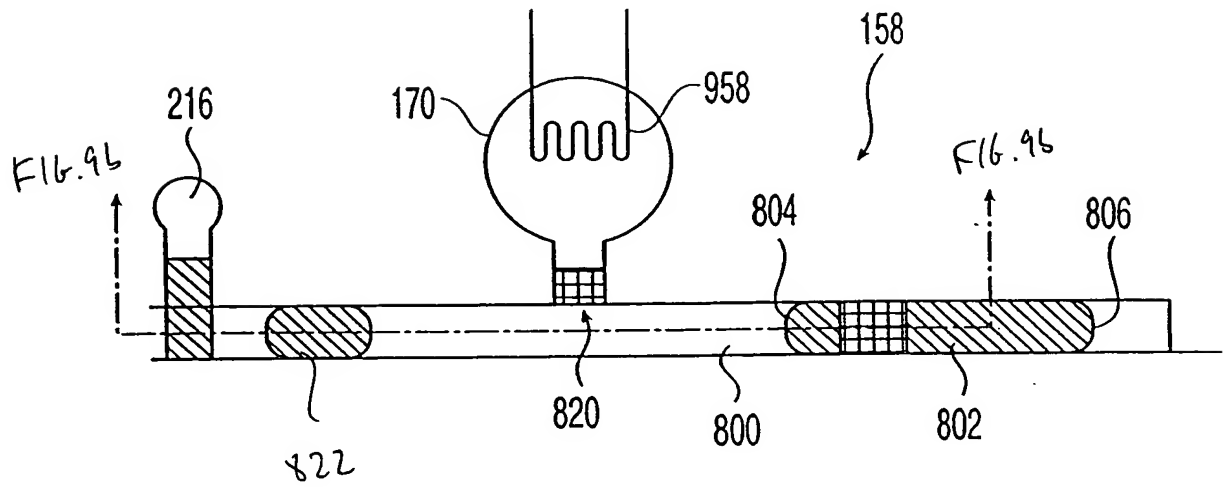


Fig. 9a

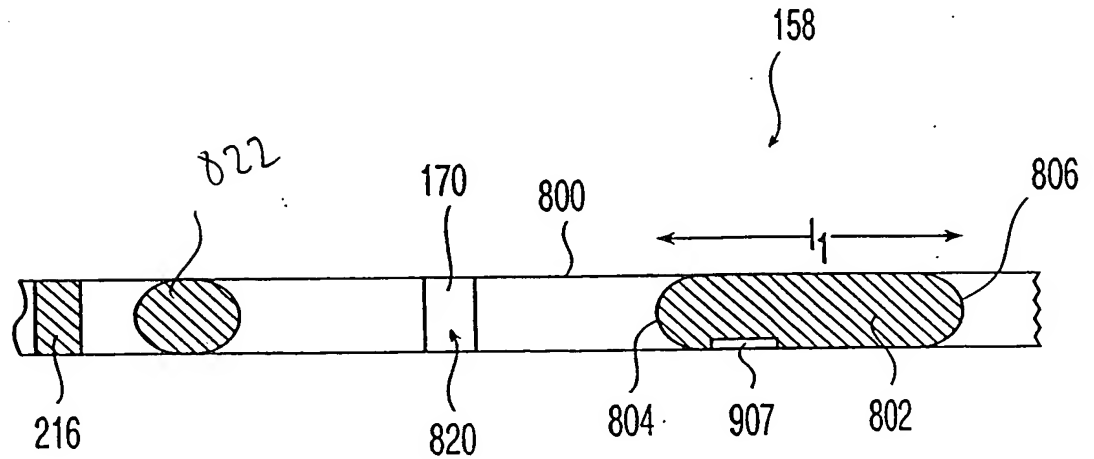


Fig. 9b

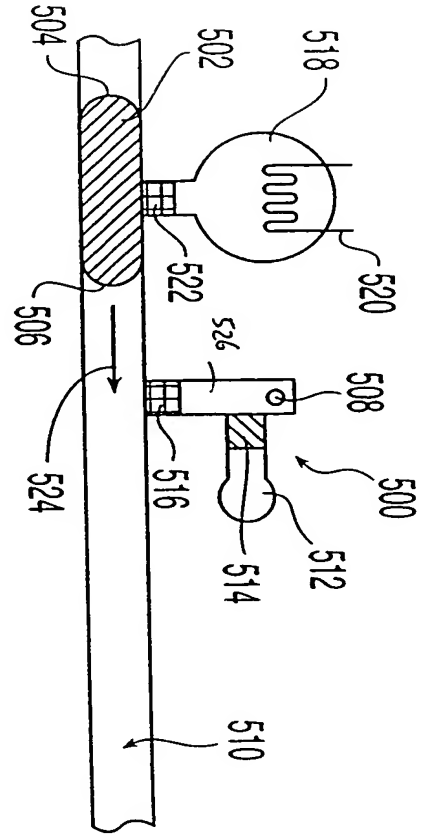


Fig. 11a

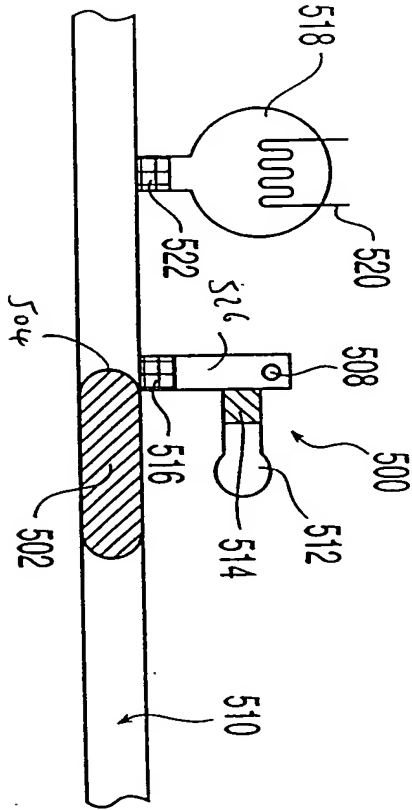


Fig. 11b

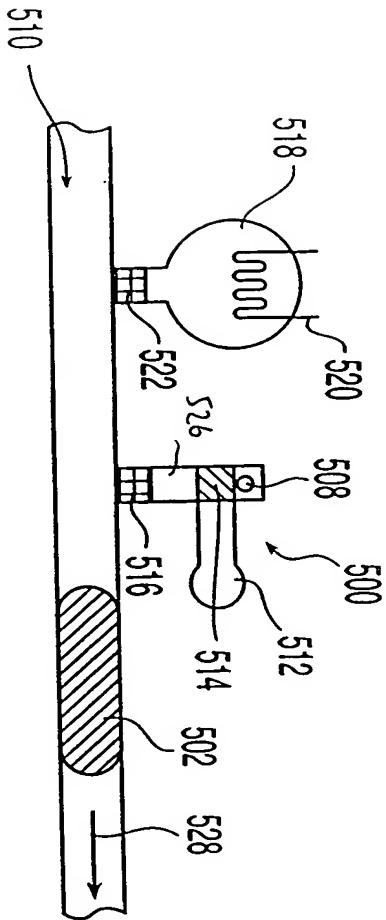


Fig. 11c

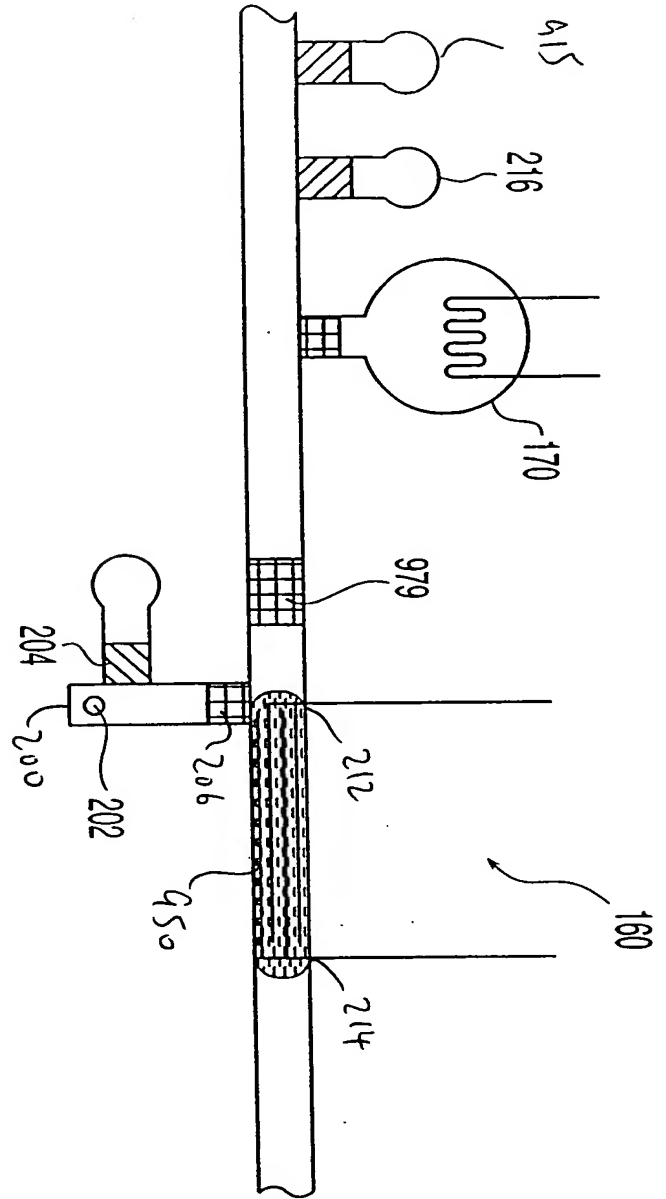


Fig. 12a

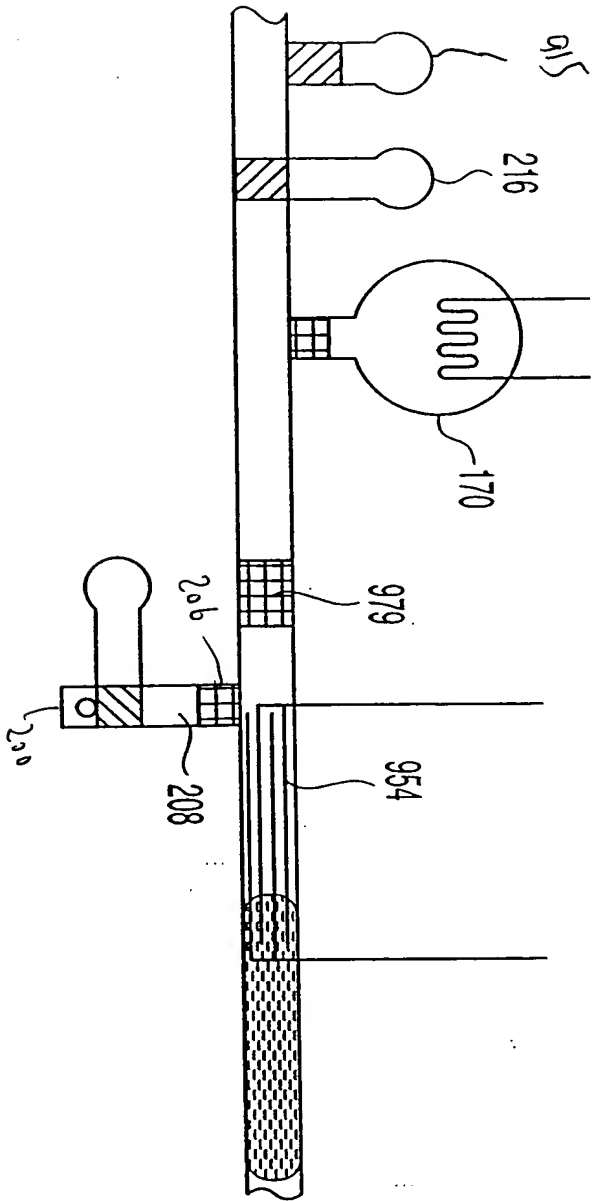


Fig. 12b

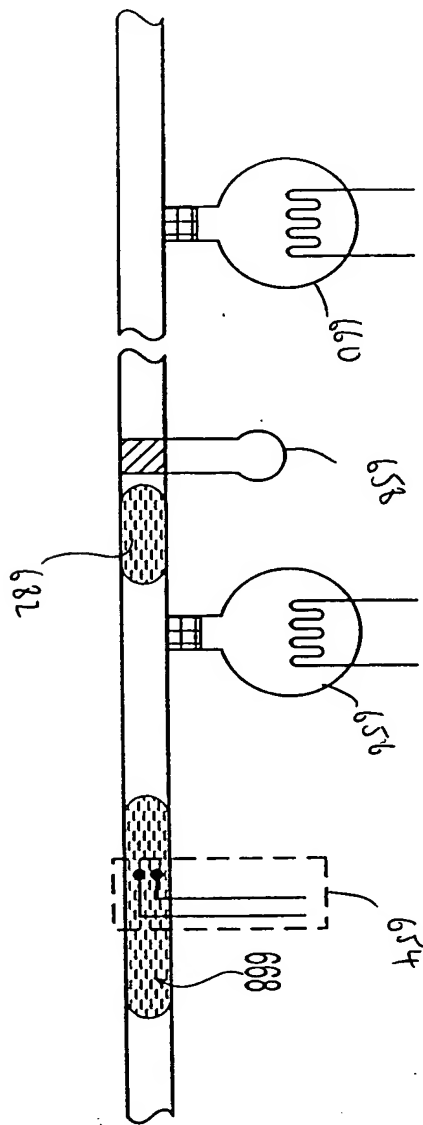


Fig. 15c